Beth Israel Lahey Health
Beth Israel Deaconess Medical Center

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Elevator Finishes Design Guidelines

These guidelines are required as part of the basis of design for all Elevators designed for Beth Israel Deaconess Medical Center. The guidelines shall not directly replace consultant specifications but are intended to convey a set of standards for all related projects at the Facility. Where applicable codes conflict with these guidelines the codes shall supersede these requirements and consultant shall notify the BIDMC Facilities Engineering Department of such conflicts and guidelines shall be updated accordingly. Any deviation from these requirements shall be brought to the attention of the BIDMC Facilities Engineering Department during review with an explanation why it is required or how it may improve the system or systems affected.

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Elevator Finishes Guidelines Table of Contents

1. TOTAL LOAD SPECIFICATIONS

Elevator load specifications are dependent upon the function intended for them. Different functions might include elevators intended for; passengers, service, helipad transport and trauma. This section provides specifications regarding actual load, taking into account the equipment and finishes present within an elevator in addition to personnel capacity.

1.1 **Passenger Elevators**: 3,850lb

1.1.1 Total load specifications may be calculated using the following criteria. Note, the criteria as follows is particular to passenger elevators and may vary according to different intended functions.

1.1.1.1 Using expected cab capacity, the *Capacity Load* approximates the weight of personnel to provide enough allowance for the total load to be deemed adequate and safe.

- Functioning Load = Bed (700lb) + Working (1,050lb) = 1,750lb
    - Elevator Bed = 700lb
    - Working Load = 1,050lb
- Capacity Load = Staff (1,500lb) + Equipment (600lb) = 2,100lb
    - Staff = 6 persons x ~250lb = 1,500lb
    - Equipment = 4pc x ~150lb = 600lb
- Total Load = Functioning (1,750lb) + Capacity (2,100lb) = 3,850lb

1.2 **Service Elevators:** 6,000lb

1.3 **Helipad Elevators:** 5,000lb

1.4 **Trauma Elevators:** 9,000lb

2. TRAVEL SPEED

Elevator travel speed, defined as Feet per Minute (FPM) varies depending on building specifications such as; the height of the building, building capacity, and the specifications of the existing or new elevator pit.

2.1 All pre-existing elevator pits must be inspected prior to any changes being made. Existing elevator pits need to be deepened and their tops raised.

3. FIRE SAFETY PROGRAMMING

All elevators are required to provide an Elevator Alternate Floor (Fire Service) Location.

When a fire emergency is present on campus, all elevators in the associated building drop out of service and lower to the lowest/most accessible level to evacuate the building safely and efficiently. If there is a fire present on that primary exit level, the elevator recall system receives that information and lowers to the next available level also known as the Elevator Alternate Floor (Fire Service) Location. Elevator recall smoke detectors are present on every floor/opening which feed into elevator safety systems and prevent the travel of an elevator to a hazardous space.

For this reason, there must be 2 elevator smoke detectors tied into the same recall system. 1 for each lobby indicating the primary floor and another for each alternate.

4. ENERGY SPECIFICATION

Elevator energy usage calls for 480 volts Alternating Current (A.C.) 3 phase with 60 cycles

5. MULTI-CAB ELEVATOR SHAFT SEPARATIONS

Safety barriers must be installed in any elevator shaft containing more than 1 elevator in order to separate travel ways. Safety barriers split multi-cab shafts to allow for work/shutdowns to occur on one (1) elevator without impeding the functionality of the other. Safety barriers should run continuously from the bottom of the elevator pit to the top deck.

5.1 National Elevator Industry Requirements Section 8.3: A barrier is required when an elevator is operating in a multiple hoist way, and construction and modernization work is being performed.

5.2 OSHA regulations require the installation of screening between adjacent elevator hoist ways to protect workers from injury

5.3 Metal mesh separators have been approved by the state elevator code coordinator so long as they; are installed by a licensed elevator mechanic, the coordinator be notified prior to installation and meet the following criteria.

5.3.1 American Wiring Specifications

- Where wire screen or perforated metal is used it shall be equal to or stronger than 0.0915in (2.324mm) diameter grill.
- The wire mesh panels shall reject a ball 1in (25.4mm) in diameter and be supported and braced when subjected to a pressure of 100lb/ft applied horizontally at any point, the deflection shall not exceed 1in (25.4mm).

5.3.2 Hoist Way Divider Screen Specifications

- 1” square mesh woven with intermediate crimp.
- #10 gauge wire diameter (W&M).
- A 1¼” x 5/8” channel surrounding the perimeter frames of panels is required to preventing telescoping when bolted to adjacent panels.
- 1” x ½” channels back to back welded or riveted must be used as horizontal stiffeners.
- Vertical posts are defined as 2” square tubes along every 0.120” of wall.
- There shall be vertical or horizontal gaps bigger than 1” except for the 3” sweep space at the bottom of pit screens.

6. COUNTERWEIGHT GUARDS

6.1 Most multi-shaft elevator pits require the installment of counterweight guards located within the elevator pits

6.1.1 Most of the 82 elevators existing on both East and West campus possess counterweight guards. This includes the 26 that were modernized in the last 15 years.

7. CAB LIGHTING SPECIFICATIONS

BIDMC requires that LED energy efficient lighting be used on all new and modernized elevators. Color and intensity must be coordinate with the Facilities department (Mark Lukitsch) prior to installations

Light dimmer switches are recommended for patient transport and public/visitor elevators and housed in the flush locked compartments within the cab.

8. BIDMC EMERGENCY CALL SYSTEMS & CARD READERS

8.1 Fire Department Emergency Call

Each elevator cab is required to have a 3502 barrel key call designated only for the use of the Boston Fire Department in the case of an emergency to call an elevator from their lobby or recall all elevators to their main floors from the fire command centers.

The key will also operate the individual elevators from the elevator cab interior panel or unlock a cabinet to access the switch inside.

Should the Boston Police need emergency elevator access, it is required that a BFD/Massachusetts licenses elevator technician operate the elevator for them.

8.2 Hospital Emergency

Because BIDMC operates in a hospital setting, these controls are designated as “hospital” emergency as opposed to “medical” emergency. Hospital emergency card readers are present for the use of all in-house staff to call elevators during code calls made by emergency staff. Once activated, the elevator’s voice command instructs all those within the cab to vacate the elevator so that emergency personnel can enter and take charge of it. Once Emergency personnel have reached their desired destination and the doors close, the elevator car returns to normal service.

8.2.1 Hospital emergency card readers are required in all elevator lobbies.

8.2.2 It is required that a lighted sign be installed within the interior of the cab to indicate when an elevator comes under emergency operation. It is

recommended that the following criteria be taken into consideration when designing the sign.

- Typically the size of a post card.
- Typically installed on the back panel of the elevator.
- Should flash "**HOSPITAL EMERGENCY"** when activated.

8.3 Medical Emergency

Medical emergency displays are not required per the BIDMC Elevator Standards. However, the state of Massachusetts does require at least one per building according MA elevator code.

8.4 Restricted Floor Card Readers

Restricted floor card readers are required in all elevator cabs that have access to high security floors and departments. The card readers are operable for all current and future RESTRICTED floors. Most BIDMC elevators do not have access to restricted floors, but have had card readers installed and wiring completed within the elevator controllers in the event that a floor needs to be made restricted, which mitigates costs toward restrictions and makes elevator shutdowns unnecessary. Restricted Access readers are required in all elevator cabs.

9. ELEVATOR BUTTON HALO LIGHTS

BIDMC standards call for light up plastic elevator buttons. Plastic buttons are preferred so that the interior can be inscribed with custom lettering such as "RESTRICTED" for restricted floors and for easy interchangeability. Typically, the standard is identified as having hollow plastic buttons with a blue halo light.

10. ELEVATOR HALL LANTERNS

BIDMC standards require that all elevators have a combination of hall indicators and lanterns. Examples ideal combinations can be found at elevators PE1-PE3 and PT1-PT2. Warning systems are also required on all elevator cab doors. For doors, green LED lights

should be used to indicate when the doors are opening/open and flashing red when they are closing.

10.1 In the situation that an elevator is installed and the ceiling height does not allow for the installation of an elevator lantern, said height should be modified to allow for the lantern to be installed overhead (like with the L-2 elevator).

11. ELEVATOR DOOR 3D EDGE

It is highly recommended that all elevator doors have a non-illuminated physical edge. This can be seen on the FD-07 elevator cab door as with the Lowry triple elevator bank.

12. CAB SPECIFICATIONS

These specifications speak directly to the installation of freight/service, passenger and clean/dirty elevators. BIDMC's preferred vendor for elevator finishes is Elevator Interior Design in Lynn, MA.

12.1 Cab Finishes

12.1.1 Return Panel: Minimum No. USSG No. 18-8 stainless steel plan surface, No. 4 satin finish

12.1.2 Entrance Columns and Transom: Minimum No. 14 USSG stainless steel plan surface, No. 4 satin finish

12.1.3 Cab Walls: Corian horizontal strips to be inlaid below cove lighting and behind top handrail. Corian strip panels. Stainless steel, #4 satin finish walls to be installed on side and rear walls.

12.1.3.1 Corian color to be determined by the owners.

12.1.3.2 All base, vertical, horizontal and frieze to be 18GA, Stainless Steel #4 Brush Finish.

12.1.3.3 Base to be #4 stainless steel, 4 ¼ inches.

12.1.3.4 Class A fire rated minimum ¾ inch plywood backing.

12.1.3.5 Hoist way side to be fireproofed with minimum No. 26 USSG galvanized sheet steel.

12.1.3.6 Required spacing to be provided for installation of finished flooring, approximately ¼ inch allowance.

12.2 Canopy Finishes

12.2.1 Minimum #12 USSG cold rolled stretcher leveled furniture steel.

12.2.2 Canopy on car side to be faced with wood core.

12.2.3 Reinforced to support weight of 5 workmen minimum as required by code.

12.2.4 Required to be sound deafened.

12.2.5 Required top emergency exit with conceal hinges, chain stops, hair line joints and operable from the top of the car only.

12.2.5.1 Operation of the lock and contact to be in accordance with A17.1-2004: 2.14.1, 5.1 and 8.4.4.1 along with MA 524 CMR 35.00.

12.3 Lighting & Ceiling

12.3.1 Required installation of a low profile ceiling directly into the canopy finished with high impact plastic laminate. Must allow for exhaust fan ventilation to flow around the ceiling.

12.3.2 12GA CRS Dome, material powder coat white finish.

12.3.3 Dome requires perforated holes to allow for fan ventilation.

12.3.4 Final decisions and ownership of lighting finishes falls to the Facilities electrical engineering group.

12.4 Ventilation

12.4.1 Installation of a stainless steel grille with vandal resistant design as approved by the owner.

12.4.2 2-speed fan to be provided.

12.4.3 Man-D Tec #MVS-12 exhaust fan with perforated holes in the dome.

12.4.4 Mount on car canopy on isolated rubber grommets with diffuser and grille.

12.5 Handrails

12.5.1 Handrails are required on both side and rear walls, two (2) on each wall and mounted at 20 inches and 35 inches.

12.5.2 Required use of No. 302 stainless steel finish in #4 satin.

12.5.3 Height above finished cab floor to conform to ADA code requirements.

12.5.4 Sections to be ¼ inch x 4 inch minimum solid bar with 1 inch diameter stainless steel spacers.

12.5.5 Ends must be turned back into the wall.

12.5.6 Required inconspicuous fastenings, thru-bolted and secured by welding 4 inch x 4 inch reinforced backing plate.

12.5.7 Fastenings shall not protrude from brackets or form rough edges.

12.6 Bottom Bumper Attachments

12.6.1 Reinforced brushed stainless steel bottom bumper required.

12.6.2 To be installed at 1 inch above the finished floor.

12.6.3 Section 3/8 inch x 18 inch, minimum solid bar.

12.6.4 Bottom bumper guard shall be on both side and rear walls.

12.6.5 Design to be approved by the owner.

12.7 Protection Pads and Pad Hooks

12.7.1 Hooks must be provided on front, side and rear panels.

12.7.1.1 Threaded stainless steel according TE-14.21.00 required.

12.7.2 Protection pads must be provided on front, side and rear panels.

12.7.2.1 Cut out for car operating panel must be provided.

12.7.2.2 One set to be provided for each elevator.

12.7.2.3 Pads must be fitted using quilted, fire retardant canvas.

12.7.2.4 Pads must be adequately filled to provide proper protection.

12.7.2.5 Stitching must be arranged to prevent sagging.

12.8 Sill

It is required that new car sills abide by the following specifications.

12.8.1 The length must accommodate the door in a fully open position.

12.8.2 Minimum thickness of 7/16 inches.

12.8.3 Grooves should be machine planed and allow for minimum guide clearance.

12.8.4 Machine rabbeted to receive existing toe guard.

12.8.5 Securely fastened to platform.

12.8.6 Shimmed to level.

12.8.7 Parallel to centerline of elevator guide rails.

12.8.8 Material to be nickel silver.

12.9 Flooring

12.9.1 Any existing sub-floor must be removed.

12.9.2 Substantial support members must be provided to prevent bowing.

12.9.3 Sub floor to be composed of marine grade plywood with 1/8 inch steel plate support.

12.9.4 All new sub-flooring requires treatment with Sherwin-Williams rust preventative premier before the installation of the new flooring.

12.9.5 Epoxy adhesive to be used over the rust preventative before rolling on the rubber floor sheeting.

12.9.5.1 Estrie Marathon Desert Stone, #DSH-191 (Night Sky)(Color: Dark Blue/Gray with light speckles) to be used for VCT tiling.

12.10 Top of Car Railing

12.10.1 Guard railing required on top of the elevator car.

12.10.2 Railing to be constructed in accordance with code, including the incorporation of a toe board.

12.11 Certificate Holder

12.11.1 The frame shall match cab accessory finishes.

12.11.2 Integral to car station.

12.11.3 Cover to be clear plastic.

12.11.4 Size must accommodate MA certificate of use.

13. CAR OPERATION PANEL SPECIFICATIONS

All new elevator cabs must be equipped with a new main cab-operating panel containing all controls required for the specified operation type. The top operating button shall not be more than 48 inches from the front approach and 54 inches from the side approach from the floor emergency controls. The emergency controls shall be no less than 35 inches from the car floor. All designations shall be engraved and backfilled. No attached signs may be used according to ETS Sec. 2.03.A.5.c.

13.1 All new car panels are required to have the following amenities:

- Floor Buttons
- Keyed emergency stop switch
- Alarm button
- Door open button
- Door close button
- Car light switch
- Two speed fan switch

- Firefighter's operation panel
- Visual Firefighters' hat jewel
- Emergency light test switch
- Key-operated inspection switch
- Key-operated independent service switch
- Vandal resistant telephone push button as an integral part of car station
    - Self-dialing, A.D.A. approved
    - All cables to be shielded for proper operation
    - Two-Way communication means (required for over 60 feet of travel)
- Digital position indicator
- Certificate frame sized for MA certificate of use
- Card readers – hospital emergency and security access control
- Hospital emergency visual signal and engraved signage
- All signage shall be engraved

14. PROVISIONS FOR THE DIFFERENTLY ABLED

It is required to provide raised Arabic numerals 5/8 inches in height and braille symbols corresponding to the numerals on the elevator buttons. The braille symbols shall be placed to the left of the corresponding raised Arabic numerals where space permits. Braille symbols must accompany the door open, door close, emergency alarm, emergency bell, emergency stop and telephone buttons.

All passenger door frames on all elevator floors shall have the number of the floor on which the frame is located designated Arabic numerals 2 inches in height and approximately 60 inches above the floor located on both sides of the jamb so that it is visible from within the elevator.

15. VOICE ANNUNCIATION SPECIFICATIONS

Voice annunciation is required for floor, direction of travel, fire service, emergency power, etc. Custom messages will be provided in accordance with BIDMC's standards. Refer to BIDMC's voice annunciation standards for additional information.

16. COMMUNICATION SPECIFICATIONS

16.1 Telephone

16.1.1 Required as an integral part of the car station.

16.1.2 Must provide a vandal resistant finish.

16.1.3 To provide a two way, self-dialing telephone.

16.1.4 All cables to be shielded for proper operation.

16.1.5 Telephone unit must be ADA approved.

16.1.6 Proper emergency identification voice recording to be recorded on the phone.

16.2 Two-Way Communications Means/Emergency Communications

16.2.1 Must be in accordance with A17.1, Section 2.27.1.1.4, to provide and install a means to enable emergency personnel within the building to establish two-way voice communications to each elevator individually.

16.2.2 The system should be compatible to the push button emergency telephone system in each elevator car operating station.

16.2.3 Once the two-way voice communication system has been established, a visual indicator within the car should be illuminated.

16.2.4 The visual indicator should extinguish when the two-way communication has been terminated.

16.2.5 Operating instructions must be incorporated with or adjacent to the two-way voice communication outside the car.

16.2.6 Instructions must conform to A17.1, Section 2.27.7.4. Instructions shall be in letters not less than 0.125 inches in height and shall be permanently installed and protected against removal or defacement.

17. MACHINE ROOM SAFETY CABINET

We are required to provide a machine room safety cabinet for storage of oils and liquids required for the proper maintenance of the elevators, as well as a machine room fire rated cabinet for the storage of prints and miscellaneous parts according to ETS section 1.52.I.4.

17.1 Cabinet Specifications

- JUSTRITE Safety Cabinet, slim line, manual close one door
- Mfg. Model #892200; Grainger item #1YNG8
- 22 gallon capacity
- 66 inch Height x 23 inch Width x 18 inch Depth
- Color: Yellow
- 3 shelf minimum
- Intended for the storage of flammable liquids
- Includes hazardous warning label